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COLONIES

AND

TRADE.

COLONIES AND TRADE.

The THANKS *of the Society were this Session voted to Dr.* WILLIAM ROXBURGH, *of Calcutta, for the following valuable Communications.*

Observations on the Culture, Properties and comparative Strength of Hemp, and other vegetable Fibres, the Growth of the East Indies, continued from page 396 *of the* 22d *Volume of the Society's Transactions.*

To prove the durability of the various materials formerly mentioned (see vol. xxii. page 382.), I had recourse to maceration in fresh water, during the hot season. The result of these trials will be found in the following table, which, in a great measure, corresponds with the former, showing the comparative strength of the various cords mentioned therein, by weights suspended by four feet lengths of them. The first three columns on the left have been explained in the first part of these observations; in this the largest cord only of each sort has been inserted. The three last on the same side express the average weight at which each sort of cord broke, after having been kept at the bottom of muddy, half putrid, stagnant pond water, from the 27th of February to the 22d of June, 1801.

	Materials, or Names of the Plants which yielded them.	Average weight at which each sort of cord broke.					
		When fresh.			After 116 days maceration.		
		White	Tanned.	Tarred.	White.	Tanned.	Tarred.
1	Hemp from England....	105	—	—	—	Rotten	—
2	Ditto growth of India .	74	139	45	A	Rotten	—
3	Coir................	87	—	—		—	—
4	Ejoo................	96	—	—	94	—	—
5	Robinia cannabina, ripe..	88	101	84	40	56	65
6	The same cut while blossoming..........	46	61	48	Rotten	68	45
7	Crotalaria juncea......	68	69	60	Rotten	51	65
8	Corchorus olitorius.....	—	—	—	—	—	—
9	Corchorus capsularis....	67	—	—	50	—	—
10	Flax, growth of India..	39	—	—	Rotten	—	—
11	Agave Americana......	110	79	78	Rotten	Rotten	15½
12	Aletris nervosus........	120	73	48	30	26	34
13	Theobroma Augusta Linn.	74	58	44	38	54	50
14	Theobroma guazuma, Hort. Cliff.........	52	47	45	30	39	—
15	Hibiscus tiliaceus......	41	62	61	40	55	70
16	Hibiscus Manihot......	61	—	—	26	—	—
17	Hibiscus mutabilis.. ..	45	53	—	Rotten	45	—
18	Hibiscus, from Cape of Good Hope........	22	—	—	17	—	—
19	Bauhina, a scandent species................	69	—	—	Rotten	—	—
20	The same, but differently prepared......	56	—	—	Rotten	—	—
21	Sterculia villosa........	53	—	—	30	—	—

Stagnant fresh water in a rather putrid state, during the hot months of March, April, May, and June, in Bengal, must be as severe a trial for vegetable fibres, as can be well found in any country. I am exceedingly glad to find that in general the fibres of our East Indian plants, stood the test infinitely better than hemp from England, or of hemp or flax the growth of Bengal.

Tar appears in general to be a better preservative than tan during the immersion, though I was formerly inclined to think otherwise. The powers of No. 4, to resist decay, correspond with what the Dutch historian Rumphius says of it in his Herbarium Amboynense. Nos. 7, 8, 9, and 13, 14, retained their strength surprisingly. No. 15, (the bark with which the inhabitants of the South Sea islands make lines), gained considerably in power in its tarred state.

In the former part of these observations, it was remarked, that numerous plants, exclusive of those which yield hemp and flax, were productive of fibres apparently well qualified for the same useful purposes; and these several sorts are pointed out, some of which had been long and well known to the natives of Asia: others appeared to me to be unknown to them. Since the date of that paper, my researches have brought to light several additional objects of the same nature, and added considerably to the imperfect knowledge I then had of others. At the close of my first experiments (vol. xxii. page 395-6) mention is made of the strength of sun cords being greatly increased while thoroughly wet with fresh water. From 100 to 200 additional experiments have been made since that time, to illustrate this interesting fact, the result of which will be found in the two last columns of the annexed table.

The cords now employed were made of three single yarns; and, as formerly, by no means so equally spun, or laid, as might have been done, by an expert European artist: nor must their strength be compared with those of the same material in the former table, because the cords are now made considerably stouter, and the yarns are, in general, better laid, on account of their being thicker; for I suspect that the smallness of the lines employed in the former trials rendered them somewhat less accurate than the present.

COM-

Comparative Statement *of the* Strength *of the various* Materials *employed in these* Experiments, *both dry and wet, by Weights suspended by Four Feet Lengths of the Cords.*

Names *of the* Plants, *or* Materials used, and *brief* Remarks thereon.	Average Weight by which each Cord broke when dry.	Average Weight by which each Cord broke when wet.	Average of Cents. by wetting the Cords.
1. Hemp, the growth of 1800, from the Company's hemp-farm, near Calcutta	158	190	20
2. Jeetee of the Rajemahl Mountaineers, the clean fibres of the bark of a new species of Asclepias	248	343	38
3. This cord is made of 15 threads of fine sail-twine from Bencoolen, the produce of a new shrubby species of nettle (Urtica)	240	278	16
4. Sun (Crotalaria juncea) cut before the plants were in blossom, and steeped immediately	112	158	41
5. The same, and cut at the same time; but the plant was dried, or rather kept for some days before it was steeped	60	78	30
6. The same, cut when in full blossom, and steeped immediately	130	185	42
7. The same as No. 6, and cut at the same time, but attempted to be cut before it was steeped	100	166	66
8. The same, cut when the seed was perfectly ripe, and steeped immediately	150	203	35
9. The same as No. 8, and cut at the same time, &c. as No. 5 and 7.	110	163	48
10. Sun, the winter crop; the seed from the coast of Coromandel, cut when the seed was ripe, and steeped immediately	160	209	31
11. A Variety of Corchorus capsularis, Teetah-paat of the Bengalese, delicately fine like flax	143	146	2
12. Reddish Corchorus capsularis; the seed imported from China; also fine and soft like flax	164	164	0

NAMES *of the* PLANTS, *or* MATERIALS *used, and brief* REMARKS *thereon.*	Average Weight by which each Cord broke when dry.	Average Weight by which each Cord broke when wet.	Average of Cents. by wetting the Cords.
13. Corchorus olitorius, Bunghi-paat of the Bengalese, and very like the two last	113	125	11
14. Robinia cannabina, Dansha of the Bengalese, cut when the seed was nearly ripe	138	145	5
15. Abroma Augusta, Hort. Kew. (No. 13 of my former paper) young shoots before the flowers opened. .	100	112	12
16. The same, from ligneous plants which had ripened their seed	121	121	0
17. Hibiscus strictus (No. 16 of my former paper, and then mistaken for Hibiscus Manihot) cut when early in blossom	104	115	10
18. The same, but cut when the seeds were perfectly ripe	128	135	5
19. Hibiscus cannabinus, Meesta-paat of the Bengalese, cut when in flower, and steeped immediately	115	133	15
20. The same, (Gong-kura of the Telingas) cut when the seed was ripe	110	118	7
21. Hibiscus, from the Cape of Good Hope (No. 18 of the former paper)	116	123	6
22. Hibiscus sabdariffa, cut when in flower, and steeped immediately	89	117	31
23. Hibiscus Abelmoschus, Kalee-Kustooree of the Hindoos, cut when in flower, and steeped immediately. .	107	107	0
24. Hibiscus esculentus D'heroos of the Bengalese, cut when in seed, and steeped a few days after	79	95	20
25. Hibiscus bifurcatus, cut when in flower, and steeped immediately	89	92	3
26. Hibiscus pilosus, an annual, cut when in advanced flower, and steeped immediately	97	130	34
27. Theobroma guazuma, young tender shoots from the roots of small trees steeped immediately	100	140	40
28. Fibres of the foot-stalks of a very large new species of plantain, (Musa superba)	79	0	0

Remarks on some of the PLANTS *or* MATERIALS *mentioned in the annexed* TABLE.

No. 2. Jeetee, of the Rajemahl hill people, who make their bow-strings of it, which are said to last five years, though in constant use, and exposed to all sorts of weather. It is the fibre of the bark of a very extensive twining, shrubby, plant, a new species of Asclepias, discovered by my son, Mr. Wm. Roxburgh, in 1800, growing wild on the tops of the hills, in the vicinity of Rajemahl. The fibres are prepared by stripping off the bark from the tender, succulent shoots, during the rainy season, when they are full of sap; and by removing the pulpy parts with the nails, or with a piece of sharp edged hard stick, upon a board. Hitherto this beautiful, strong material, has been unknown to Europeans, and, so far as I have yet been able to learn, only employed by the people of those hilly or mountainous tracts, to make their bow-strings; consequently it will be difficult to ascertain the quantity that may be annually procured, or the price. All I can say at present is, that four pounds weight of the clean fibres, a friend procured for me, for one rupee (half-a-crown). A drawing and description of this beautiful and useful plant, is in the possession of the Honourable the Court of Directors, under the name of Asclepias Tenacissima.

No. 3. Calooee, or Battang-calooee, or Poolay of the Malays, a new, shrubby species of Urtica. The cord employed was made of fine sail-twine, sent from Bencoolen by Mr. Ewer, and was made by the Malays of that place. Its strength is very great, and the beauty and fineness of the fibre adds to its recommendation. But what quantity is procurable, or the price of it, I am at present unacquainted. The plant has, however, been introduced into the botanic-garden at Calcutta, where, in little more than one year, above one thousand plants were reared from four, which were received from Mr. Ewer, the Governor of Bencoolen. I made a drawing and description, now in the possession of the Honourable the Court of Directors, of one of these plants, which flowered in November, 1804.

No. 4 to 9. The Sun, on which the experiments stated in the table were made, was sown between the 11th and 18th of June, 1801, and cut at 14 different ages, beginning on the 26th of July following, before the blossoms appeared, and ending the 14th of September, when the seed was fully ripe. The fibres of these different crops were prepared in different ways; viz. by macerating for a longer or shorter time; by steeping immediately after being cut; by being half-dried; or dried as well as the season would permit, as practised on the coast of Coromandel.

The average result of these various trials, will be found reduced to six numbers, in the table. But it is necessary to observe that the constant wet, or very damp weather, which prevails in Bengal at this season, renders it almost impossible to dry the plant, and must injure the quality of the fibre: indeed few seasons will admit of drying the plant to any extent. Various experiments, from half a day to half a year's drying, and keeping, were made with the view of ascertaining, whether steeping immediately after the plant was pulled, or at any other period, was the best for retaining the full strength of the fibre; and I have reason to believe, that immediate steeping is to be preferred, at least in Bengal, during the rains.

No. 10. This was a few square yards of Sun, reared from seed, which was received from Ganjam, on the coast of Coromandel; and though sown with the rest of the seeds in June, did not blossom till the close of the rains in October, nor ripened its seed till January. This sort I would call Winter Sun, because what is generally cultivated in Bengal, requires only about three months from the time of sowing (middle of June) for the ripening of the seed (September).

From the experiments made I am led to draw the following conclusions: viz.

1st. That the fibres of this material, are softer and finer when the seed is sown thick, and the plant cut as early as the flowering season, or rather before, and that they become coarser progressively, till the plant, which is annual, perishes.

2d. That the fibres are at their greatest strength, when the seed is ripe, which corresponds with the opinion of the natives. At this period the crop requires about one-third more time to complete the maceration, than if cut at the flowering season; it may amount to, from 48 to 72 hours, according to the warmth of the water, and state of the weather. Deep water requires more time to complete the operation than shallow water, which is generally some degrees warmer.

3d. That the sooner the plant is committed to the water, after being cut, the better: probably, because during the rains it is very difficult to dry it, and on that account the strength of the fibre will be weakened and the colour injured. Besides in cleaning or dressing the Sun, by the usual modes practised in Europe for hemp, I found on an average, that the original quantity was reduced only one-third, when the plant was steeped immediately, and nearly one-half if kept with the view of drying it, before it is put into water.

4th. I found the practice of drying the plant, after maceration, and previously to the removal of the bark, as followed in Europe with hemp and flax, by no means advantageous, but prejudicial.

For an account of the plant Crotalaria juncea, which produces the Sun, and for the method of cultivating it on the coast of Coromandel, which is different from that in Bengal, consult the Coromandel Plants, Vol. II. No. 193.

No. 11, 12, 13. As a substitute for flax these seem to deserve attention, on account of the length, strength, and fineness of the fibre, and from the durability and strength of it, after 116 days maceration. The seed of No. 12 was brought from Canton in China, under the name of China Hemp, and grows as freely in Bengal, as the sorts in general cultivation there. But while the produce was fully as great, the quality was better, which induced me to distribute the seed among the natives, and recommend the cultivation of this sort in preference to No. 11 and 13.

No. 15 and 16. Abroma Augusta, of the Hortus Kewensis, called by the younger Linnæus Theobroma Augusta, in his Supplementum Plantarum; and Woollet Comal of the Bengalese. My remarks of the 31st of January, 1801, closed with an account of this plant. The Biggah there mentioned, or rather half Biggah (for by measurement it proved to be no more) yielded two luxuriant cuttings during the hot and rainy seasons; and a third of a more limited growth by the end of the cold season. For while the cool northerly wind prevails, during November, December, and January, the plant grows but little. The quantity of clean fibre obtained from the two first cuttings, weighed 245lb. avoirdupois; and from the third, 26lb. making together 271lb. which is a produce three times greater than the average produce of Sun from the same quantity of land. As the plants, though nearly two years old, are still luxuriant, I have reason to expect that their average produce will be for many years to come as great, if not greater, than it was last year. Another great advantage in favour of the Abroma Augusta is, that the Sun requires to be drest, for convenience of stowage, prior to its being shipped, by which it loses about one-third of its weight: the fibres of the Abroma Augusta are naturally clean and white, and do not, in my opinion, require dressing.

No. 17 and 18 is No. 16 of my former communication, and there called Hibiscus Maniho. It is, however, I am now convinced, an undescribed species from the Moluccas, which I call H. Strictus, on account of the remarkable straightness of the stem and branches. Last year all the fibres of the few plants I then had, were only sufficient to make one line. The experiments on this beautiful material were, on that account, very limited. Nevertheless the seed collected from these few plants, produced plants sufficient to fill 40 square yards of land, and yielded 33 pounds weight of the naturally clean fibre from one cutting: and, as it is a short-lived annual, does not yield any second crop. A drawing and description of this plant is in possession of the Honourable the Court of Directors.

No. 19 and 20. Hibiscus cannabinus, an annual universally known over India, and in many parts cultivated, not only for the fibres of its bark, but also for its green leaves, which are of an agreeably acid flavour, not unlike sorrel, and used by the Hindoos as a pot-herb. For a drawing and description of the plant, consult Coromandel Plants, Vol. II. No. 190.

Ejoo, * No. 4 of my former memoir, in which it is observed, that this very valuable and beautiful tree is found to grow well in Bengal. Since that time I have attended particularly to its growth, and found that on an average, each tree produces about six leaves in the year, and that each leaf yields 10½ ounces of ejoo (the black horse-hair-like fibres † employed for making cordage) which makes the annual produce of each tree within a fraction of four pounds ‡.

Besides,

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* Palma Indica venifera; and Rumph. Anub. vol. i. p. 57. t. 13. Arenga saccharifera of Labillardiere. Anou. Marsden's history of Sumatra, p. 77.

† The fibres grow from the base of the footstalks (stip.) of each leaf (frond.) and embrace completely the trunk of the tree. The fibres and leaves are easily removed without injuring the tree.

‡ Some of the very best trees I have found to produce fully one pound of the fibres in each leaf.

Besides, this palm abounds, probably, more than any other in wine, furnishing sugar and ardent spirits; and when the tree arrives at maturity, the pith of it is one of the varieties of sago meal, used by these people in their diet. Hence we have every reason to think, that it will prove one of the most profitable trees which can be cultivated in warm countries, at least in those where it will grow freely.

I had various other plants in cultivation for further experiments, when bad health obliged me to desist and come to England. From the following I had prepared the fibres, but had not made any experiments on their strength.

Agave Tuberosa of the Hortus Kewensis. The large leaves of this elegant species, which has lately been introduced into Bengal, are replete with strong white fibres, far superior in appearance to those of Agave Americana (No. 11 of my first paper).

Musæ. The plantain in its wild state abounds in strong fibres, more or less fine. The species which we call Coccinea, yields what is called Manilla hemp: at least it was sent to me from China as that plant.

Helicteris Isora. The inhabitants of the Malabar mountains, employ this material for making twine and cordage. In Wynaad they call it Ky-walla-nara. It is strong, but rather coarse, and of a dull colour. Various species of Sida, particularly Rhombifolia, and Periplocifolia, yield uncommonly fine fibres. In Rhombifolia they are particularly delicate. Urenalobata and Sinuata also abound with them. In short, the whole of the plants of this extensive natural order, called by Linnæus, Columniferæ, and by Jussieu, Malvaceæ, are furnished with substitutes for hemp and flax.

P. S. Samples of most of the materials mentioned in this paper, I have in my possession, and it is my intention to deposit them in the East India Company's Museum in Leadenhall-Street.

DEAR SIR,

I WISH the above Paper may prove acceptable to the Society of Arts, &c. I also send to you a Table of the growth of trees in the Botanic Garden at Calcutta; the average circumference of several of each sort of trees mentioned in the list, in inches and quarters, were taken 4½ feet above the ground, at the end of October, when the year's growth may be reckoned over. The difference between the numbers in the adjoining columns, gives one year's increase in the circumference of each sort.

I am, with much regard,

Dear Sir,

Your most obedient Servant,

W. ROXBURGH.

No. 5, Prospect-Place, Chelsea,
March 19*th*, 1806.

To Dr. C. TAYLOR.

ON THE GROWTH OF TREES IN THE BOTANIC G

NAMES OF THE TREES.	SYNONYMAS.	YEARS					
		2	3	4	5	6	
Tectona grandis	Teak, E. Sagoon, H....	—	7	10½	—	—	—
* Swietenia Mahogani............	Mahogany, E.	—	—	—	—	—	2
Swietenia chickrassa.............	Chickrassy, H.	—	—	—	—	—	—
Swietenia febrifuga	Soymida, T. Roheena, H.	—	—	—	—	—	—
Terminalia alata tomentosa........	Asseen	—	—	—	—	—	—
Terminalia bialata...............	....	—	—	—	—	—	—
Terminalia catappa	Buddam..............	—	—	—	—	—	—
Terminalia procera	....	—	—	—	—	—	—
Terminalia belerica	Beheyrah, H	—	—	—	—	—	—
† Dalbergia sissoo	Sissoo, H.............	5	11½	14¼	17½	—	—
Dalbergia ougienensis	....	—	—	—	—	—	1
‡ Dalbergia emarginata	....	—	—	—	—	—	—
Pterocarpus marsupium	Yeangashaw, T........	—	—	—	—	—	—
Pterocarpus Dalbergioides	Andaman, red-wood....	—	—	—	—	—	—
Cedrela toona	Toon, or Tooni, H.	—	—	—	—	—	—
Mimosa seereesa	Seerees, H.	—	—	—	—	—	—
Mimosa Xylocarpa	Conda-tangheroo, T....	—	—	—	—	—	1
Mimosa elata	....	—	—	—	—	—	—
Mimosa stipulacea	Amlooki	—	—	—	—	—	—
Mimosa lucida	....	—	—	—	—	—	—
Pterospermum paniculatum	Mows-jāl, H.	—	—	—	—	—	—
Aleuritis triloba	....	—	—	—	—	—	2
Nauclea stipulacea	....	—	—	—	11	13½	
Nauclea necotianifolia	....	8	15¾				
Uvaria odorata	....	—	—	—	14	19	
Casuarina muricata, in garden mould.	....	—	—	—	20	22	
The same in a very sandy soil	....	—	—	—	26½		
Cassia Sumatrana	....	17½	23½				
Butea frondosa	Palas, H.	—	—	—	—	—	—
Lagerstromia Reginæ	Jaral, or Jarool, H......	—	—	—	—	—	—
Gmelinia arborea	Gumār, or Gumhār, H..	—	—	18½			
Melia azedarach.................	....	—	—	—	—	37½	
Bignomia suberosa	....	—	—	—	—	—	—
Sterculia villosa	....	—	—	—	—	—	—
Andersonia altissima.............	Siri-Maun, T..........	—	—	—	12½	15½	
Myristica aromatica	Nutmeg..............	—	—	—	—	3½	4

* Two Plants (and the first) were sent by the Honourable the Court of Directors, to the Botanic Garde
from these two. It succeeds so perfectly well in the East Indies, that the tree will, without doub

† An immense tree of very quick growth. It supplies the ship-builders at Calcutta, with all the knee, and

‡ This promises to be more durable than Sissoo. It is a native of the Andaman Islands. As yet, the trees

NOTE. In the column of Synonymas, H. means Hindoostanee, T. Tel

E BOTANIC GARDEN AT CALCUTTA IN BENGAL.

(*To face Page* 154.

YEARS AGE OF THE TREES MEASURED IN 1803 AND 1804.																
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
10½	—	—	—	—	18¼	21¼	—	—	—	—	—	42½	44¼			
—	—	—	25½	30¼												
—	—	—	—	—	25	28										
—	—	—	—	—	21½	24½										
—	—	—	—	—	—	—	—	—	—	—	37	38				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	51	53½	
—	—	—	—	—	—	30	32½									
—	—	—	—	—	23	25										
—	—	—	—	—	—	20	23¼									
14¼	17½	—	—	—	—	—	—	—	—	—	—	—	—	—	70	75
—	—	—	12½	14¼												
—	—	—	—	—	—	—	—	—	—	25½	30					
—	—	—	—	—	—	—	—	23	26							
—	—	—	—	—	—	27	29½									
—	—	—	—	—	—	—	—	32¼	35	—	42					
—	—	—	—	29	31½											
—	—	—	17	21												
—	—	—	—	—	—	28	30½									
—	—	—	—	40	48½											
—	—	—	—	—	—	—	—	49	56½							
—	—	—	—	—	—	—	—	—	—	—	—	21½	24½			
—	—	—	28½	31												
—	11	13½														
—	14	19														
—	20	22														
—	26½															
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	43
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	48½	53
18½																
—	—	37½														
—	—	—	—	—	—	—	36	39¼								
—	—	—	—	25	27½											
—	12½	15½														
—	—	3½	4½	Two and a half feet above the ground.												

to the Botanic Garden at Calcutta, in 1795; and by the end of 1804, above 500 plants had been reared

ree will, without doubt, in a few years, prove a valuable acquisition to that country.

with all the knee, and other crooked timber, It is strong, but not very durable.

ds. As yet, the trees on the continent of India are small, and but few in number.

Hindoostanee, T. Telinga, and E. English.

The SPECIMENS *noted in the following* LETTER *are placed in the Society's Repository.*

DEAR SIR,

I THINK it more than probable that the Society of Arts, &c. do not possess any specimen of the vegetable fibres, commonly called Ejoo in the East Indies, I have, therefore, the pleasure of sending you a parcel of that substance, consisting of six small rolls, the produce of a small tree for one year. The tree produces, on an average, six leaves every year, and each leaf yields from about four to twenty ounces. It is No. 4. of my first paper on the comparative strength of various vegetable fibres, published in the xxii. vol. of the Society's Transactions. A description of the tree has lately been published by Labillardiere, under the name of *Arenga Saccharifera.* It is the *Anou* of Marsden in his History of Sumatra, page 77: in Rumphius's Herbarium Amboynense, vol. i. page 57, and table 13. a very full account of this valuable palm will be found. By Louriero, in his Flora Cochinchinensis, p. 759, it is called Borasus Gomutus. The cultivation of this beautiful, stately, and very useful palm may, I think, with the prospect of great advantage, be encouraged in the West Indies. For, besides the above-mentioned fibres, which are in high estimation for thick cordage and cables in India, this palm furnishes sugar, and abounds, as before mentioned, probably more than any other, in wine, which, in its recent state, is a pleasant and wholesome beverage, and is also converted by the Malays into ardent spirits; and when the tree arrives at maturity, the pith of it is one of the varieties of sago meal used by these people in their diet.

I have the pleasure also of sending you a specimen of a most curious, light, vegetable substance, the spreading stems of *Acschynomene Aspera*, a water plant, called by the Hindoos and Bengalese *Solah*, and *Fool-Solah*. It is employed by them for a variety of purposes, such as floats for fishing nets, artificial flowers, &c. Might it not be advantageously employed instead of cork, in making jackets to swim with, and in life-boats, &c.? At all events, the bare circumstance of making known the existence of such a plant, and the place in which it flourishes, will, I am persuaded, be acceptable information to the Society.

I am, Dear Sir,

Yonr most obedient humble Servant,

W. ROXBURGH.

No. 5, Prospect-Place, Chelsea,
April 5, 1806.
To Dr. C. TAYLOR.

The SILVER MEDAL *of the Society was this Session voted to* Mr. PHILEMON WRIGHT, *County of York, Lower Canada, for the* CULTURE *of* HEMP *in that Province.*

The following Communications were received from him, and Samples of the Hemp and Seed are preserved in the Society's Repository.

SIR,

THIS is to certify, that Mr. Philemon Wright, of the township of Hull, in the district of Montreal, and province of Lower Canada, did, in the month of November last past, prefer a memorial and representation to the honourable Thomas Dunn, president of the said province, and administrator of the government thereof, containing in substance as follows.

That the memorialist did sow and cultivate 10 English statute acres of hemp, annually, during the years 1802, 1803, and 1804.

That owing to the great drought which prevailed in 1804, the crop was unproductive, reducing the medium produce of the three years to about 600 weight of clean drest hemp of the first quality per acre.

That all the hemp sown in Hull was by the broad-cast method, at the rate of three bushels per acre. (The land, which was of a rich grey loom, was previously ploughed thrice, and harrowed, and again harrowed after the seed had been sown.)

That he commenced pulling the male hemp on or about the first of September, laid it in rows to dry, and when it had received one day's sun, turned the rows over with a short pole, and suffered them to remain until they became thoroughly dry; that he gathered them up in fair weather, and bound them with willow withs into small bundles of two feet and a half in circumference, and then piled them into stacks of 500 bundles each, covering them with straw, or otherwise, to protect them from rain.

That the process of maceration was performed in stagnant pools of water, of about three feet in depth, where the bundles were sunk in regular rows, by means of poles laden with stones, to at least two inches below the surface of the water, and there suffered to remain from seven to nine days, if during the middle of September; but when so late as the middle of October, from 16 to 18 days: the number of days, however, depending on the temperature of the water. That when the hemp peeled and separated easily from the stalk or pith from end to end, it was taken out of the water, and laid to drain a day or two, then removed to a fit place, unbound, and spread out thinly, that it might dry thoroughly; after which it was bundled again, and housed or stacked as before, until leisure admitted the breaking or dressing of it. That if the bottom of the pool were muddy, poles were laid under the hemp, to prevent its coming in contact with the mud; but if gravel or sand formed the bottom, this precaution was unnecessary.

That the memorialist practised another process after maceration, which has been attended with good effect, and a great saving of manual labour, viz. after the water is drained from the hemp, open the bottom of the bundle by raising the band or withy, then set it up against paling or rails, and there let it remain until the month of April, when it will dress much easier; for the action of the frost and air destroys the glutinous matter, which is the greatest obstacle in dressing, and thus facilitates the separation of the hemp from the pith or woody substance.

That hemp macerated late in the season is tough and hard to break or dress, in consequence of its not being sufficiently dried, and is attended with great waste.

That the memorialist, by keeping such hemp until the second winter, experienced that a man would dress double the quantity of it, in the same time, that he could the preceding year.

That in dressing by hand, three heavy breaks were used in succession, the first bearing two grooves, the next four, and the third the same number, but more compact.

That the female plant, or that bearing seed, was suffered to stand until fully ripe, usually the first week in October, when it was cut down, suffered to lie two days in fair weather, then turned, and when sufficiently dry, threshed with an ordinary flail upon cloths, or on a trodden level space upon the field, winnowed, and housed as speedily as possible. That this hemp was afterwards treated in the same manner as the male hemp, though its produce is much inferior both in quantity and quality.

That there being no other labourers to resort to than the immediate settlers upon the township, the price of labour is extravagantly high: a bushel of wheat or a dollar is the lowest rate for daily hire per man. That this price, together with victualling, made the medium expense attendant on the cultivation of a statute acre of hemp in the township of Hull, from first to last, to amount to 10*l.* currency. That this scarcity of labourers arises from the township being 80 miles from the last settlements in the province upon the Ottawa, or Grand River, and from the infancy of its establishment, which commenced within these five years.

That it appears, by the Certificate of the Secretary to the hemp committee, at Montreal, that more than three quarters of the hemp produced in that district, and purchased by the committee between the first of May 1802, and the first of August 1805, was raised in the township of Hull, where a considerable quantity was also manufactured in three looms and six rope-walks, set up and worked by the inhabitants for their own use.

And I do further certify that the foregoing particulars regarding the culture of hemp in the township of Hull, by Mr. P. Wright, during the three successive years, as set forth in his memorial, are supported by regular affidavits of persons residing on the spot, to the satisfaction of the executive government of this province.

Witness my hand at Quebec, this 22d day of January, 1806,

HERMAN W. RYLAND,
Clerk of the Executive Council of Lower Canada.

To C. TAYLOR, M. D.

The Society received a Certificate from the honourable T. DUNN, president of the province of Lower Canada, stating that HERMAN WITSIUS RYLAND, Esq. is clerk of his Majesty's executive council for the province of Lower Canada.

Mr. Frederic Arnold, *of the River Thames, Upper Canada, and* Mr. Joshua Cornwall, *of the same Place, were each presented with a* Silver Medal *from the Society, for the* Culture *of* Hemp *in Canada.*

The following Communications were received from them, and Samples of the Hemp and Seed are preserved in the Society's Repository.

Expense of cultivating 11 acres and eight perches of hemp, three feet apart, by Mr. Joshua Cornwall, of the River Thames, Upper Canada.

		£.	s.	d.
1802. June.	7 days ploughing	5	16	0
	Drilling and harrowing	3	0	0
	Half a bushel of seed	1	4	0
August.	7 days pulling-out the summer-hemp	2	16	0
October.	9½ days cutting the seed	3	16	0
November.	21 days gathering, threshing and cleaning the seed	8	8	0
		£.25	0	0

Expense of cultivating 12 acres, 2 quarters, and 30 perches of hemp, 18 inches apart, by Frederick Arnold, of Howard, River Thames, Upper Canada, commencing the first day of May, 1802.

	£.	s.	d.
9 days ploughing with a man and horses	7	4	0
3 days harrowing	2	8	0
3 men and team, for four days drilling	6	0	0
3 men for 5½ days weeding, and pulling-out the summer hemp	6	12	0
1 man eleven days cutting the seed-hemp	4	8	0
A pair of horses and one man hawling the hemp for 4 days	3	4	0
Thrashing and cleaning the seed	7	4	0
	£.37	0	0

Certificates, with respect to the two preceding lots, have been transmitted to the Society from A. IREDELL, Esq. stating the quantity of land cultivated with hemp, and the distance of the plants from each other.

From Mr. WILLIAM SHAW, and Mr. LEMUEL SHERMAN, stating that they measured 80 bushels of hemp seed, in 1803, raised on the above lot by JOSEPH CORNWALL.

From Mr. GEORGE REYNOLDS, who had seen 146 bushels of hemp-seed measured, which, to his knowledge, had been raised on the above lot by Mr. FREDERIC ARNOLD; sworn before W. SHAW.

From Mr. WILLIAM SHAW, stating that Messrs. J. CORNWALL and F. ARNOLD, had sworn before him, that the two accounts of expence above inserted, and given in by them respectively, are, to the best of their knowledge, true.

And from P. HUNTER, Esq. Lieutenant-governor of the province of Upper Canada, stating that WILLIAM SHAW and ABRAHAM IREDELL, Esq. are two of his Majesty's justices of the peace for that province.

To Dr. C. TAYLOR.

TWENTY DOLLARS *were this Session adjudged to* Mr. GEORGE WARD, *of the Township of Camden, Upper Canada, for the* CULTURE *of* HEMP *in that Province.*

The following Communication was received from him, and Samples of the Hemp and Seed are preserved in the Society's Repository.

SIR,

I BEG leave to transmit through your hands to the Society of Arts, &c. vouchers in favour of George Ward, a farmer, living near this part of the country; as also a certificate from his honour Alexander Grant, president of the government, stating, that Abraham Iredell, and James Baly, are two of his majesty's justices of the peace for that district.

I forward to you, at the same time, a bundle containing two quarts of hemp seed, and 28lbs. of hemp, as samples.

I have the honour to be,
Sir,
Your most obedient humble Servant,
W. ALLAN.

Camden, May 12, 1803.

Account of expense in cultivating two acres and eight square chains of good new land for drilled hemp.

		£.	s.	d.
May 12.	Ploughing, a man and team, at 16s. per day .	4	0	0
	Harrowing, 16s. per day	1	2	0
	Furrowing with a man and horse -	0	18	0
	Sowing seed in furrows, at 18 inches apart, 2 men at 4s. per day each - - - - - - - -	0	8	0
	Harrowing (same day)	0	16	0
June 27.	Ploughing between the drills to destroy the weeds	0	9	0
	Hoeing; men at 4s. per day each	2	0	0
Oct. 16.	Cutting; men at do.	1	4	0
	Carrying	1	12	0
	Threshing; men at 6s. per day each	1	4	0
	Cleaning seed; men at 4s. per day each . .	0	8	0
	1 man attending to stir and air the seed . . .	0	4	0
		£.14	5	0

N. B. No charge is made for men's provisions.

G. WARD.

The vouchers in possession of the Society are from J. Baly, Esq. before whom the account of expenses incurred was attested; from A. Iredell, Esq. Surveyor, who measured the land; and from the president, Alex. Grant, Esq. who testifies that J. Baly, Esq. and A. Iredell, Esq. are both his Majesty's Justices of the peace in and for the western district of Upper Canada.

To Dr. C. Taylor.